

**UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF NORTH CAROLINA**

Food Lion, LLC, and Maryland and
Virginia Milk Producers Cooperative
Association, Inc.,

Plaintiffs,

v.

Dairy Farmers of America, Inc.,

Defendant.

Case No. 1:20-cv-442

DECLARATION OF PROFESSOR MIKHAEL SHOR

20 May 2020

I, Mikhael Shor, declare:

1. I am an Associate Professor of Economics at the University of Connecticut. I have a B.A. in economics and foreign affairs from the University of Virginia and an M.A. and Ph.D. in economics from Rutgers University. Over the last two decades, my research and teaching have largely focused on the economics of industrial organization and competition policy. I have published journal articles and a book chapter on competition economics, industrial organization, auctions, and consumer behavior. I am also the coauthor of a popular textbook on managerial economics and an associate editor of *Economic Inquiry*, a peer-reviewed journal. Previously, I was an Assistant Professor at the Owen Graduate School of Management at Vanderbilt University where I developed and taught one of the first courses on game theory applied to business strategy in the country. I have also taught courses on law & economics, industrial organization, and game theory at the undergraduate, M.B.A. and Ph.D. level.

2. In addition to research and teaching, I have consulted on antitrust and competition matters for twenty years. In that time, I have assisted with multiple merger reviews as well as analyses of collusion and market definition. I have served as a consultant on competition matters including the evaluation of mergers in bidding markets for the Federal Trade Commission and have also served as a consultant on competition matters including mergers, acquisitions, and vertical restraints for private companies. I attach my curriculum vitae as an appendix.

3. I have been asked by counsel for Food Lion and for Maryland and Virginia Milk Producers Cooperative Association, Inc. (MDVA) to comment on the potential competitive economic effects of the acquisition by Dairy Farmers of America (“DFA”) of certain assets of Dean Foods (“Dean”) in North Carolina and South Carolina. I understand that the acquisition combines, in part, the dairy cooperative, distribution, and processing interests of DFA with three processing plants in the Carolinas previously owned by Dean.

4. I was engaged to provide general economic analysis in this matter on April 8 and began work on this declaration on April 23. In this limited time, I have: (1) reviewed the Food Lion and MDVA presentations and MDVA responses provided to the U.S. Department of Justice Antitrust Division (“DOJ”) in connection with its investigation of DFA’s acquisition of Dean’s assets; (2) reviewed additional material provided to me by MDVA and Food Lion; (3) interviewed MDVA and Food Lion personnel; and (4) reviewed other publicly available material regarding the milk industry in general and the enforcement actions by the DOJ in connection with the Dean/Suiza merger in 2001 and the present matter in May 2020. Given the urgent nature of these proceedings, I have not yet conducted any econometric analyses. I have not had opportunity to analyze all of the data available to me and I do not have access to key information and data from DFA/Dean that will be important in supplementing my preliminary opinions. For these reasons, I am careful to note where I have not yet formed an opinion or where my opinions are preliminary. My analysis continues, and I may modify or supplement my opinions as I examine additional materials or as additional information becomes available.

5. My preliminary opinion is that the acquisition is likely to have an anticompetitive effect. Even though the current information available to me is limited, it is sufficient to allow an economist to evaluate the likely competitive effects of the facts as laid out in the complaint. In addition, this acquisition involves a unique circumstance—a years-long exclusive supply agreement between DFA and Dean—that helps guide my analysis. In a typical analysis of a merger or acquisition, economists have to make predictions about how firms would act after the acquisition. In this case, we do not need to rely solely on predictions; market inefficiencies, attempted monopolization, and anticompetitive effects observed under the supply agreement pre-acquisition will be further cemented by the acquisition; whereas without the acquisition, they would have waned.

6. Based on my review of materials to date, I conclude that the acquisition of Dean's processing plants in the Carolinas by DFA is likely to reduce potential sources of raw fluid milk ("raw milk") and/or increase the price of raw milk to non-DFA/Dean processing plants. This would occur because DFA/Dean would sell less raw milk to other processing plants and buy less raw milk from other cooperatives than it would have absent the acquisition. The resulting higher input costs to DFA/Dean's rival processors, in turn, will likely result in higher processed fluid milk ("processed milk") prices offered by both DFA/Dean and its rivals, thereby hurting processed milk customers, including retailers, in and around North Carolina and South Carolina.

7. Absent the acquisition, I would have expected processed milk prices to decline upon the termination of the exclusive supply agreement between DFA and Dean. Conversely, the acquisition is likely to extend any anticompetitive harms from the exclusive supply agreement.

8. I am being compensated at an hourly rate of \$540 and my compensation is not contingent on the outcome of this proceeding.

A. Background

9. Milk moves through as many as four industry levels from cow to a consumer's home: (1) *producers* or farmers who produce the raw milk; (2) *cooperatives* (such as DFA and MDVA) owned by groups of farmers to jointly market their raw milk; (3) *processors* (such as pre-acquisition Dean) who pasteurize, process, and bottle milk; and (4) *customers* who include retailers (such as Food Lion) who then sell the processed milk to consumers. This matter involves questions about how competition will be affected in the sale of raw milk by cooperatives to processors, as well as in the sale of processed milk from processors to customers.

10. Raw milk exhibits several commercial realities that differentiate it from most other farm goods. First, raw milk must be kept cool and is highly perishable.¹ Second, unlike many other farm products, raw milk lacks a specific harvest period and is instead produced daily, requiring constant movement of goods from farms to processors.² Third, seasonality of production runs counter to seasonality of demand; demand is highest during periods of lower production and vice versa.³ Lastly, raw milk is the necessary input into processed milk; processed milk is rather unique in its nutritional composition and regularly features on U.S. dietary guidelines.⁴

11. Each dairy farmer can select whether to join a cooperative or to market raw milk to processors independently. Cooperatives can serve several functions including jointly marketing raw milk to processors, arranging for transportation of raw milk to processors, and coordinating

¹ Joel Greene (2017), Federal Milk Marketing Orders: An Overview, Congressional Research Service (13 Dec), R45044, at 1, available at <https://crsreports.congress.gov/product/pdf/R/R45044>.

² Joel Greene (2017), Federal Milk Marketing Orders: An Overview, Congressional Research Service (13 Dec), R45044, at 1, available at <https://crsreports.congress.gov/product/pdf/R/R45044>.

³ Joel Greene (2017), Federal Milk Marketing Orders: An Overview, Congressional Research Service (13 Dec), R45044, at 1, available at <https://crsreports.congress.gov/product/pdf/R/R45044>.

⁴ The U.S. dietary guidelines recommend three servings of dairy a day for those above the age of eight, consisting of no-fat or low-fat milk or yogurt, fortified soy beverages, or to a lesser extent, cheese. U.S. Department of Health and Human Services and U.S. Department of Agriculture (2015), Dietary Guidelines for Americans 2015–2020, at 23, available at https://health.gov/sites/default/files/2019-09/2015-2020_Dietary_Guidelines.pdf.

quality testing.⁵ Dairy cooperatives also offer a service called balancing⁶—coordinating milk supply to offset fluctuations in demand.

12. The benefits of joining one cooperative over another may vary by dairy farm depending on its location, size, efficiency of operations, and other factors. A primary role of cooperatives is to jointly negotiate prices and contract with processing plants. For processors participating in the Federal Milk Marketing Order (FMMO) program, prices for raw milk are regulated and depend on the processor's location.⁷ These processors agree to pay at least a minimum price, though cooperatives often negotiate an additional "service charge" or "over-order premium."⁸ A cooperative negotiating price on behalf of all of its producers can have the additional benefit for its members (but not necessarily for other participants in the milk industry) through higher prices obtained by eliminating competition between producers in the same cooperative.⁹

13. The choice of joining a cooperative can be influenced by relationships between cooperatives and processors such as a cooperative's ownership of a processor, an exclusive agreement between a cooperative and a processor, or a processor's preference to buy raw milk from some cooperatives over other cooperatives. In these cases, joining a specific cooperative may be a dairy farmer's only economical way to sell the farmer's raw milk to processors.

⁵ U.S. Government Accountability Office (2019), Dairy Cooperatives: Potential Implications of Consolidation and Investments in Dairy Processing for Farmers, GAO-19-695R (27 Sept), at 10, available at <https://www.gao.gov/assets/710/701795.pdf>; Declaration of Mike John, at ¶¶ 5, 7.

⁶ James J. Wadsworth (2019), Marketing Operations of Dairy Cooperatives 2017, U.S. Department of Agriculture Rural Development Research Report 234, at 10, available at <https://www.rd.usda.gov/files/publications/RR234MarketingOperationsofDairyCooperatives2017.pdf>.

⁷ U.S. Department of Agriculture (1996), Agriculture Marketing Services, Dairy Division, Questions and Answers on U.S. Federal Marketing Orders, AMS-559, available at <https://dairymarkets.org/pubPod/pubs/AMS-559.pdf>; Joel Greene (2017), Federal Milk Marketing Orders: An Overview, Congressional Research Service (13 Dec), R45044, at 5, available at <https://crsreports.congress.gov/product/pdf/R/R45044>. Some states also operate their own marketing orders. Joel Greene (2017), Federal Milk Marketing Orders: An Overview, Congressional Research Service (13 Dec), R45044, at 3, available at <https://crsreports.congress.gov/product/pdf/R/R45044>.

⁸ For example, Dean reports that "Generally, we pay the federal minimum prices for raw milk, plus certain producer premiums (or 'over-order' premiums) and location differentials." Dean Foods Company (2019), 2018 Form 10-K, at 38, available at <https://ir.deanfoods.com/static-files/63e25807-c779-41da-89e3-a3eb9d3360d1>.

⁹ Farmers collectively marketing their products were given certain exemptions from the Sherman Act by the 1922 Capper-Volstead Act.

14. Milk processors convert raw milk into processed, pasteurized, bottled fluid milk (as well as other dairy products) for sale to grocery stores, convenience stores, schools, and other customers. Processors can be owned by large companies that own numerous processors, by dairy cooperatives, or by retailers. Unlike raw milk, the price of processed milk is unregulated and set solely through negotiations between processors and their customers.¹⁰ Large customers often solicit bids from multiple processors for the sale of processed milk.¹¹

15. In the last few decades, the milk industry has seen consolidation at all levels, with fewer (but larger) farms and cooperatives and fewer processing plants.¹² At the same time, per capita consumption of fluid milk has declined considerably, primarily due to a shifting of tastes away from milk and toward other beverages. Meanwhile, production of milk continues to rise.¹³ This has led to more intense competition among farmers and cooperatives for ever-declining demand by consumers and therefore processors. Many farmers have left the business, with some facing prices below the cost of milk production.¹⁴

16. Dean was formed in 2001 from the merger of Suiza Foods Corporation and the Dean Foods Company, the two largest milk processors in the United States. At the time, DFA was

¹⁰ Joel Greene (2017), Federal Milk Marketing Orders: An Overview, Congressional Research Service (13 Dec), R45044, at 5, available at <https://crsreports.congress.gov/product/pdf/R/R45044>. Prices often take the form of a formula that adjusts to changing input costs and a negotiated profit for the processor.

¹¹ Declaration of Mark Latva, at ¶¶ 4, 10.

¹² James J. Wadsworth (2019), Marketing Operations of Dairy Cooperatives 2017, U.S. Department of Agriculture Rural Development Research Report 234, at 9, 13, 19, 26–27, available at <https://www.rd.usda.gov/files/publications/RR234MarketingOperationsofDairyCooperatives2017.pdf>; U.S. Government Accountability Office (2019), Dairy Cooperatives: Potential Implications of Consolidation and Investments in Dairy Processing for Farmers, GAO-19-695R (27 Sept), at 2–3, available at <https://www.gao.gov/assets/710/701795.pdf>.

¹³ James J. Wadsworth (2019), Marketing Operations of Dairy Cooperatives 2017, U.S. Department of Agriculture Rural Development Research Report 234, at 29, available at <https://www.rd.usda.gov/files/publications/RR234MarketingOperationsofDairyCooperatives2017.pdf>.

¹⁴ Donald W. Patterson (2009), Turning Sour: Falling Prices for Milk Leave N.C. Dairy Farmers Struggling for Survival, Greensboro News & Record (27 Aug), available at https://www.journalnow.com/news/state/turning-sour-falling-prices-for-milk-leave-n-c-dairy-farmers-struggling-for-survival/article_e8e985fb-b37c-5a39-a111-5092d8a4a65d.html; Emma Newburger (2020), ‘It Crushes Me’: Dairy Farmers Struggle to Survive Trump’s Trade Wars and Declining Milk Demand, CNBC (4 Jan), available at <https://www.cnbc.com/2020/01/04/us-dairy-farmers-battle-extinction-trump-trade-wars-lower-milk-prices.html>.

both an investor in and the primary supplier of raw milk to Suiza. It is my understanding that, following that 2001 merger, DFA and Dean entered into what was effectively a twenty-year “full supply agreement” that gave DFA the option to be the sole supplier of raw milk to Dean plants.

17. Following the 2001 Dean/Suiza merger, I understand that both DFA and MDVA supplied various Dean plants, with Dean likely using competition between the two suppliers to secure better prices for raw milk. In the last six years, Dean unexpectedly began to replace MDVA supply with DFA supply, and eventually shifted all supply for its Carolinas plants to DFA.¹⁵ It is MDVA COO Mike John’s understanding that this was not a competitive decision made by Dean on the basis of price, but a decision made by DFA leveraging its supply agreement.¹⁶ This practice by DFA to supplant other suppliers at Dean processing plants was not confined to the Carolinas. “[A]s Dean came to dominate regional markets, any dairy farmer who wanted to sell to one of Dean’s 50 brands had to go through DFA, without any alternative option.”¹⁷ Thus, the largest cooperative in the country controlled the supply of raw milk to the largest processor in the country, to the exclusion of other suppliers.

18. I understand that (absent the acquisition) the expiration of the full supply agreement would have allowed Dean to source its raw milk competitively.¹⁸ I also understand that if any processing plants were now acquired by another entity, the supply agreement with that plant would no longer apply, allowing any non-DFA owner of that plant to source its raw milk competitively.¹⁹

¹⁵ Declaration of Mike John, at ¶ 14.

¹⁶ Declaration of Mike John, at ¶¶ 14, 17.

¹⁷ Jennifer Gao and Nigel Haworth (2011), The Global Dairy Industry, Report Prepared for the International Union of Food Workers, at 126, available at <http://www.iuf.org/sites/cms.iuf.org/files/Final%20IUF%20report.pdf>.

¹⁸ Declaration of Mike John, at ¶¶ 18–19.

¹⁹ Mr. John’s Declaration states that MDVA, which submitted a bid for one of the Carolina processing facilities in the Dean bankruptcy proceeding, would have purchased that plant free of any obligation to buy raw milk from DFA. Declaration of Mike John, at ¶ 19. My current understanding (subject to modification following additional research and discovery) is that the sale of any Dean facility to a purchaser other than DFA would likewise be free of obligation under the supply agreement at the date of sale, rather than at the agreement’s expiration in 2021.

B. Markets & Market Power

19. As is common with vertical mergers or acquisitions, this case involves relevant markets at two levels of the dairy supply chain. The acquisition potentially impacts competition upstream (as raw fluid milk moves from farmers to processors) and downstream (as processed fluid milk moves from processors to customers). I examined what are likely to be relevant products in both upstream and downstream markets and considered Plaintiffs' proposed geographic regions.

20. Market definition examines how buyers view different products and how willing buyers would be to substitute products in response to a price change. Market definition is not an end in itself but rather it is an analysis performed to inform the theory of the case by enabling an inference of market power.²⁰ "Specifically, antitrust markets are defined in terms of specific theories of anticompetitive harm."²¹ In defining a market at each level of competition affected by a vertical acquisition, I follow FTC and DOJ guidance to rely on market definition principles outlined in the FTC-DOJ Horizontal Merger Guidelines.²² These guidelines prescribe the use of a "hypothetical monopolist test to identify a set of products that are reasonably interchangeable with a product sold by one of the merging firms."²³ Conceptually, a product market is a set of products that if (hypothetically) controlled by a single firm (monopolist) would allow that firm to profitably implement "a small but significant and non-transitory increase in price ('SSNIP')."²⁴

²⁰ Werden, Gregory (2013), Why (Ever) Define Markets? An Answer to Professor Kaplow, *Antitrust Law Journal* 78(3), 729–746.

²¹ David Glasner and Sean P. Sullivan (2019), The Logic of Market Delineation, *Antitrust Law Journal*, *forthcoming*, at 6, available at <https://ssrn.com/abstract=3223025>.

²² U.S. Department of Justice & Federal Trade Commission (2010), Horizontal Merger Guidelines, available at <http://www.justice.gov/atr/public/guidelines/hmg-2010.pdf>; For vertical mergers, "the Agencies use the methodology set forth in Sections 4.1 and 4.2 of the Horizontal Merger Guidelines to define relevant markets for vertical mergers." U.S. Department of Justice & Federal Trade Commission (2020), Draft Vertical Merger Guidelines (10 Jan), at § 2, available at <https://www.justice.gov/opa/press-release/file/1233741/download>.

²³ U.S. Department of Justice & Federal Trade Commission (2010), Horizontal Merger Guidelines, at § 4.1.1, available at <http://www.justice.gov/atr/public/guidelines/hmg-2010.pdf>.

²⁴ U.S. Department of Justice & Federal Trade Commission (2010), Horizontal Merger Guidelines, at § 4.1.1, available at <http://www.justice.gov/atr/public/guidelines/hmg-2010.pdf>.

21. Raw fluid milk is untreated milk produced by milking cows. Raw fluid milk is the crucial ingredient in processed fluid milk, including the milk on store shelves of retailers around the country.²⁵ It is likely that raw fluid milk is a relevant product market as there are not any significant substitutes to raw fluid milk to which processors could turn. Thus, a hypothetical monopolist over all raw fluid milk could impose a SSNIP.

22. To determine whether processed fluid milk is a relevant product market, I examined the extent to which customers of processed fluid milk are likely to substitute to other beverages in response to price changes. Over the last forty years, processed fluid milk has seen a significant decline, generally losing customers to milk alternatives such as “soy milk” and “almond milk,” as well as to carbonated beverages and bottled water. Many of these alternate products do not appear to be reasonably interchangeable substitutes for processed fluid milk, however, in an economic sense. A Department of Agriculture (“USDA”) study found that the decline in processed fluid milk sales is primarily generational, with younger consumers less likely to prefer processed fluid milk to milk alternatives than older consumers.²⁶ Processed fluid milk and milk alternatives do not so much compete with each other as they serve “different life-long habits” of different age cohorts.²⁷ Based on this research, my preliminary conclusion is that most consumers who have switched to milk alternatives have done so for reasons mostly unrelated to price. Because consumers do not switch due to price, these alternatives do not constrain the ability of the hypothetical monopolist over processed fluid milk to raise price.

²⁵ Dean Foods Company (2019), 2018 Form 10-K, at 4, available at <https://ir.deanfoods.com/static-files/63e25807-c779-41da-89e3-a3eb9d3360d1>.

²⁶ Hayden Stewart, Diansheng Dong, and Andrea Carlson (2013), Why Are Americans Consuming Less Fluid Milk? A Look at Generational Differences in Intake Frequency, U.S. Department of Agriculture, Economic Research Service (May), ERR-149, available at https://www.ers.usda.gov/webdocs/publications/45073/37651_err149.pdf; Hayden Stewart, Diansheng Dong, and Andrea Carlson (2012), Is Generational Change Contributing to the Decline in Fluid Milk Consumption?, *Journal of Agricultural and Resource Economics*, 435–454, at 448, (“Contributing to the decline in fluid milk consumption since the 1940s is a tendency for successively newer generations to exhibit a lower level of demand than the preceding generation.”).

²⁷ Hayden Stewart, Diansheng Dong, and Andrea Carlson (2013), Why Are Americans Consuming Less Fluid Milk? A Look at Generational Differences in Intake Frequency, U.S. Department of Agriculture, Economic Research Service (May), ERR-149, at 10, available at https://www.ers.usda.gov/webdocs/publications/45073/37651_err149.pdf.

23. Demand for processed fluid milk by retailers and other customers of processors is generally derived from demand for processed fluid milk by *their* customers. In other words, Food Lion's demand for processed fluid milk depends on how much people who shop at Food Lion want it, and how much they are willing to pay for it. Economists summarize how much customers react to changes in price with a measure called *elasticity*.²⁸ The more sensitive consumers are to price—the more likely they are to stop buying a product as its price increases—the more elastic is demand. Retailer demand for processed fluid milk is what is termed “inelastic,” meaning that it is relatively insensitive to changes in price.²⁹ In fact, milk is often the archetypical example of an inelastic good in introductory economics textbooks.³⁰ When demand for a good is inelastic, a price increase is more likely to be profitable. Therefore, a hypothetical monopolist over all processed fluid milk would likely be able to impose a SSNIP that would be profitable even with some consumers switching away from processed fluid milk.

24. I also considered candidate geographic markets for each product. Geographic markets inevitably require boundaries even though a firm just inside the boundary may be located in close proximity to one just outside. At issue is not whether a geographic market encompasses

²⁸ Luke Froeb, Brian McCann, Mikhael Shor, and Michael Ward (2017), *Managerial Economics*, 5th ed., Cengage Learning, at 72.

²⁹ Demand is termed *inelastic* if elasticity is less than 1 and *elastic* if elasticity is greater than 1. A Department of Agriculture study determined that fluid milk had an elasticity of 0.1 and was not significantly different from an elasticity of 0.0, meaning no response to a change in price. Abigail Okrent and Julian Alston (2012), *The Demand for Disaggregated Food-Away-From-Home and Food-at-Home Products in the United States*, U.S. Department of Agriculture, Economic Research Service (August), ERR-139, at 19, 21, available at https://www.ers.usda.gov/webdocs/publications/45003/30438_err139.pdf. The same authors also conducted a review of academic estimates of elasticity and found that milk is inelastic across studies and methodologies. Abigail Okrent, and Julian Alston (2011), *Demand for Food in the United States: A Review of the Literature, Evaluation of Previous Estimates and Presentation of New Estimates of Demand*, Giannini Foundation of Agricultural Economics, Berkeley, CA, Monograph 48, at 56–57, available at <https://vinecon.ucdavis.edu/wp-content/uploads/2019/04/cwe1002.pdf>. A larger review of 26 studies found the mean measure of elasticity for milk to be 0.59 with a 95% confidence interval of 0.40–0.79, entirely in the inelastic range. Tatiana Andreyeva, Michael Long, and Kelly Brownell (2010), *The Impact of Food Prices on Consumption: A Systematic Review of Research on the Price Elasticity of Demand for Food*, *American Journal of Public Health* 100(2), 216–222, at 219, available at <https://ajph.aphapublications.org/doi/10.2105/AJPH.2008.151415>. Also see Joel Greene (2017), *Federal Milk Marketing Orders: An Overview*, Congressional Research Service (13 Dec), R45044, at 1, available at <https://crsreports.congress.gov/product/pdf/R/R45044> (“Fluid milk has a more inelastic demand than most other dairy products—that is, fresh milk consumption is not very sensitive to price changes.”)

³⁰ See, for example, Robin Wells, Paul Krugman, and Martha Olney (2007), *Essentials of Economics*, Worth Publishers, at 119 (introducing the notion of elasticity and using milk as the example of an inelastic good).

all alternatives to which any buyer may turn. Instead, the question is whether enough buyers would turn to other suppliers in response to a price increase by a hypothetical monopolist of all suppliers in the candidate geographic market to render the price increase unprofitable.

25. As a starting point, it can be informative to examine where companies—in the ordinary course of business—view their competitors or their service areas.³¹ Joint MDVA and Food Lion discussions reference and strategize over a “NC & SC service area” for raw fluid milk, and the location of “Food Lion warehouses in North Carolina and South Carolina” for processed fluid milk.³² These suggest that the Carolinas may be an appropriate starting point for defining geographic markets to determine whether DFA/Dean would be able to profitably exercise market power in raw fluid milk and processed fluid milk, in light of the claims in this case.

26. For the geographic market, transportation costs are a major barrier to moving milk (a perishable product) long distances. I understand that a rule of thumb used by MDVA in the ordinary course of business is that transporting raw fluid milk costs 10 cents per gallon per 100 miles. This implies that at a price of \$2/gallon, a processor buying raw fluid milk from a farm 100 miles away would face a 5% cost increase over buying from a farm located next to the processor. Thus, a nearby farm could raise its current price of \$2 per gallon by 5% and its nearby processor would pay the increase rather than buying raw fluid milk from a farm more than 100 miles away. This is consistent with Milkco’s statement that “Most of the raw milk supply comes from within a 150-mile radius of Milkco’s facility.”³³ Based on the information available to me thus far, it is likely that a hypothetical monopolist over the bulk of raw fluid milk supplied to Carolina plants would be able to profitably raise price by a SSNIP.

³¹ In discussing “Evidentiary Sources for Market Definition,” the Department of Justice and Federal Trade Commission note “In the vast majority of cases, the Agencies largely rely on non-econometric evidence, obtained primarily from customers and from business documents.” U.S. Department of Justice & Federal Trade Commission (2006), Commentary on the Horizontal Merger Guidelines, at 9, available at <https://www.justice.gov/atr/file/801216/download>.

³² Maryland & Virginia Milk Producers Cooperative Association, Food Lion Strategy Meeting 2018, at 9. MDVA-DOJ-00000026-29, provided in response to DOJ request of 18 February 2020.

³³ Milkco, Our Company, available at <http://www.milkco.com/our-company/>, accessed 30 April 2020.

27. I understand that typical shipping distance for processed fluid milk to Food Lion distribution centers in the Carolinas is less than 100 miles.³⁴ If this is generally true for other customers due to transportation costs, then North Carolina and South Carolina is likely to be a market for the sale of processed fluid milk because a hypothetical monopolist over all economically reasonable suppliers could profitably increase price by a SSNIP.

28. As previously discussed, the ultimate goal of market definition is to identify market participants and to evaluate whether they may reasonably have the ability to adversely affect competition. Given that it is probable that the combined DFA/Dean has significant market power in both raw fluid milk and processed fluid milk and both in and around North Carolina and South Carolina, conclusions about market power are not likely to be significantly affected following a more rigorous, localized market definition analysis.³⁵

29. Additionally, the ability to set different prices can make each buyer the center of a separate “market.”³⁶ While there are differences in the effect of this acquisition across different producers, processors, and customers, the commercial realities of the milk market³⁷ create localized market power that is substantially similar across the Carolinas.

30. DFA/Dean is both the largest dairy cooperative and the largest milk processor in the country.³⁸ I have not yet accessed data sufficient for independently deriving either

³⁴ On occasion, shipping distances for processed milk exceed 100 miles but these arrangements have been described as “not ideal.” Interview of Mark Latva, Vice President of Category Management, Food Lion, 14 April 2020.

³⁵ For some purposes, it is useful to identify not only a candidate market that satisfies the hypothetical monopolist test but the smallest market that does so. While there may be other geographic markets that also satisfy the hypothetical monopolist test (and my preliminary analysis does not allow me to draw a conclusion on this issue), my opinions about the ultimate competitive effects of the acquisition are unlikely to change significantly.

³⁶ U.S. Department of Justice & Federal Trade Commission (2010), Horizontal Merger Guidelines, at § 4.1.4, available at <http://www.justice.gov/atr/public/guidelines/hmg-2010.pdf>.

³⁷ Primarily, these are inelastic demand and high transportation costs for both raw fluid milk and processed fluid milk.

³⁸ Declaration of Mike John, at ¶¶ 6, 8; Chris Isidore (2020), One of America's Oldest and Largest Milk Producers Files for Bankruptcy, CNN.com (6 January), available at <https://www.cnn.com/2020/01/06/business/borden-dairy-bankruptcy/index.html>; U.S. Government Accountability Office (2019), Dairy Cooperatives: Potential Implications of Consolidation and Investments in Dairy Processing for Farmers, GAO-19-695R (27 Sept), at 9 (2017 data), available at <https://www.gao.gov/assets/710/701795.pdf>.

cooperatives' (and independent dairies') market shares or processors' market shares as both would require data from DFA/Dean. As a preliminary matter, I note that of the six processors in North Carolina and South Carolina, DFA/Dean owns three. As I detail below, the other three include two plants owned by grocery retailers (which do not generally compete as aggressively for other business) and one in the midst of bankruptcy. These facts alone suggest that DFA/Dean is likely to have both significant market share and market power in both upstream and downstream markets.

31. Nationally, DFA/Dean's dairy cooperative's member volume is more than double the second largest cooperative, California Dairies.³⁹ For the relevant region, I have reviewed DFA's market share estimates that MDVA calculates in the normal course of business and that MDVA provided to the Department of Justice.⁴⁰ These data include MDVA's estimates of DFA's and its partners' production as a function of each state's total production of raw fluid milk in 2018 (Table 1).⁴¹ Per these data, DFA accounted for a majority of raw fluid milk production in both North Carolina and South Carolina in 2018.

Table 1: Market Share of DFA (and its Partners) of Raw Milk Production by State, 2018

| STATE | MARKET SHARE |
|----------------|--------------|
| North Carolina | 65% |
| South Carolina | 59% |
| Virginia | 50% |
| Georgia | 84% |

³⁹ U.S. Government Accountability Office (2019), Dairy Cooperatives: Potential Implications of Consolidation and Investments in Dairy Processing for Farmers, GAO-19-695R (27 Sept), at 9 (2017 data), available at <https://www.gao.gov/assets/710/701795.pdf>.

⁴⁰ Maryland & Virginia Milk Producers Cooperative Association (2020), MDVA Response to DOJ Information Request, "002_MDVA Information Request Responses 1-31" (31 Jan) at 31; Interview of Mike John, Chief Operating Officer of Milk Marketing, MDVA, 1 May 2020.

⁴¹ MDVA started with the USDA's National Agricultural Statistical Service 2018 data on total production for each state, deducted its own and partner Cobblestone's production, and, based on its knowledge and experience, deducted estimated production of non-DFA and non-MDVA producers. The remaining production is MDVA's best estimate of the total production of DFA and its partners (Lanco in Georgia and Virginia, Appalachian Dairy Cooperative in North Carolina and South Carolina, Southeast Milk Producers in South Carolina and Georgia, and Premier Milk Producers in Georgia). Interview of Mike John, Chief Operating Officer of Milk Marketing, MDVA, 1 May 2020.

32. To fully understand Dean/DFA's milk producer role in the Carolinas, I would want to examine DFA's share of all raw fluid milk *sales* to plants located in North Carolina and South Carolina, rather than just share of all *production* in those states. However, that calculation would require data from DFA/Dean. As a proxy, I also consider DFA's share of production in northern and southern neighboring states in 2018. DFA has a substantial share of production in the Carolinas and in each of the northern and southern neighbors which also ship raw fluid milk into the Carolinas. From these data, it seems reasonable to infer as a preliminary matter that DFA/Dean has a significant and dominant share of raw fluid milk sales into the Carolinas.

33. As I discussed above, DFA did not gain its substantial pre-acquisition market size entirely through competitive means, but at least partly (if not largely) due to its exclusive supply agreement with Dean. This supply agreement ensured DFA an outlet for sale of its raw fluid milk even if it were more cost effective for Dean to buy raw fluid milk from closer cooperatives.

34. Turning to market power in processed fluid milk, DFA/Dean is the largest milk processor in the United States.⁴² Per the data provided by MDVA to the DOJ,⁴³ Dean was also the largest milk processor in the Carolinas in 2019, as Table 2 indicates. These processing and capacity utilization estimates, developed by MDVA in the normal course of business, combine company intelligence from dispatchers, haulers, past and current supply agreements, and plant visits.⁴⁴ Further, these market shares are likely to understate Dean's market power for three reasons. First, the next two largest processors are both owned by grocery chains and therefore are likely to

⁴² Declaration of Mike John, at ¶ 6; Chris Isidore (2020), One of America's Oldest and Largest Milk Producers Files for Bankruptcy, CNN.com (6 January), available at <https://www.cnn.com/2020/01/06/business/borden-dairy-bankruptcy/index.html>.

⁴³ Maryland & Virginia Milk Producers Cooperative Association (2020), MDVA Response to DOJ Information Request, "002_MDVA Information Request Responses 1-31" (31 Jan) at 27; Interview of Mike John, Chief Operating Officer of Milk Marketing, MDVA, 1 May 2020.

⁴⁴ For the three non-Dean plants, MDVA (including its partner, Cobblestone) is the sole or major supplier of raw milk. MDVA also used to be the sole supplier of Dean's High Point facility. For High Point and Winston-Salem, other business intelligence was supplemented with plant visits to produce estimates. Interview of Mike John, Chief Operating Officer of Milk Marketing, MDVA, 1 May 2020. These figures represent amount of raw milk processed and not the production of processed fluid milk (which would require DFA/Dean data that is not available to me).

Table 2: Milk Processing by Plant in North Carolina and South Carolina, 2019

| FACILITY | GALLONS (MILLIONS) | SHARE | UTILIZATION (% OF CAPACITY) |
|---------------------------------------|-----------------------|-------|--------------------------------|
| Dean (pre-acquisition) | 165.3 | 59% | |
| Spartanburg, SC | 83.7 | | 73% |
| High Point, NC | 29.3 | | 50% |
| Winston-Salem, NC | 52.3 | | 71% |
| Borden | | | |
| Charleston, SC | 20.9 | 7% | 50% |
| Grocery Owned | | | |
| Hunter Farms (Kroger), High Point NC | 46.0 | 16% | 92% |
| Milkco (Ingles Markets), Ashville, NC | 50.2 | 18% | 75% |
| TOTAL | 282.6 | | |

prioritize meeting the milk needs of their parent grocer above other potential customers.⁴⁵ Second, Kroger's Hunter Farms plant processes a greater share of raw milk into ice cream than any other plant, suggesting that its relevance in the processed fluid market is overstated.⁴⁶ Lastly, Borden is itself initiating a restructuring through bankruptcy.⁴⁷ Thus, those three processing plants may not be good options for customers of processed milk, with the exception of Kroger and Ingles.

35. A common starting point for determining whether a firm has significant market power is to first examine the firm's market share and second to evaluate whether the market has entry barriers. The Horizontal Merger Guidelines specify concentration levels above which the

⁴⁵ Hunter Farms was acquired by Harris Teeter, now a subsidiary of Kroger. Hunter Farms, About Us, available at <https://hunterfarms.com/about-us>, accessed 30 April 2020. Milkco is a subsidiary of Ingles Markets. Ingles Markets, Milkco, Inc., available at <https://www.ingles-markets.com/milkco>, accessed 30 April 2020. *Also see* Declaration of Mark Latva, at ¶¶ 7, 10.

⁴⁶ Interview of Mike John, Chief Operating Officer of Milk Marketing, MDVA, 1 May 2020.

⁴⁷ Chris Isidore (2020), One of America's Oldest and Largest Milk Producers Files for Bankruptcy, CNN.com (6 January), available at <https://www.cnn.com/2020/01/06/business/borden-dairy-bankruptcy/index.html>.

market is deemed “Highly Concentrated.”⁴⁸ The draft Vertical Merger Guidelines cite a market share of 20% as a rough threshold above which mergers or acquisitions deserve close scrutiny.⁴⁹ In either case, based on the data above, the shares or concentration levels of the combined DFA/Dean in both upstream and downstream markets are above both of these thresholds. I also note that Dean’s pre-acquisition processed milk market share of 59% is greater than the 51% combined market share in New England that the DOJ alleged is “a highly concentrated market” that would “lead to higher prices and inferior service for supermarkets, schools, and other fluid milk customers.”⁵⁰ In New England, the DOJ is seeking the divestiture of a processing plant to address its competitive concern.⁵¹ Likewise, in North Carolina and South Carolina—where DFA/Dean also control a majority of the processed fluid milk market—there is the potential for serious competitive harm.

36. Entry can offset some anticompetitive concerns created by a merger or acquisition, but significant entry into raw milk production appears unlikely. Dairy farming entails high fixed costs and a lead time of about two years from calf to a revenue-generating cow.⁵² Dairy farmers have seen significant consolidation, years of oversupply, eroding profit margins, and exit, which are not conducive to new entry.⁵³ Entry into milk processing also appears unlikely. While I have

⁴⁸ U.S. Department of Justice & Federal Trade Commission (2010), Horizontal Merger Guidelines, at § 5.3, available at <http://www.justice.gov/atr/public/guidelines/hmg-2010.pdf>.

⁴⁹ U.S. Department of Justice & Federal Trade Commission (2020), Draft Vertical Merger Guidelines (10 Jan), 3, available at <https://www.justice.gov/opa/press-release/file/1233741/download>.

⁵⁰ Complaint, United States of America, Commonwealth of Massachusetts, and State of Wisconsin v. Dairy Farmers of America, Inc., and Dean Foods Company (Northern District of Indiana, Eastern Division, 1 May 2020) at ¶¶ 22, 13, available at <https://www.justice.gov/opa/press-release/file/1273031/download>.

⁵¹ Asset Preservation and Hold Separate Stipulation and Order, United States of America, Commonwealth of Massachusetts, and State of Wisconsin v. Dairy Farmers of America, Inc., and Dean Foods Company (Northern District of Indiana, Eastern Division, 1 May 2020), available at <https://www.justice.gov/opa/press-release/file/1273006/download>.

⁵² Joel Greene (2017), Federal Milk Marketing Orders: An Overview, Congressional Research Service (13 Dec), R45044, at 1–2, available at <https://crsreports.congress.gov/product/pdf/R/R45044>.

⁵³ Roger Johnson, President of National Farmers Union (2019), Statement Submitted to the House Committee on Agriculture Subcommittee on Livestock and Foreign Agriculture (April 30), available at <https://nfu.org/2019/04/30/chronic-oversupply-depressed-prices-plague-dairy-industry/>.

not conducted an analysis as to the profitability of entry, I am aware that MDVA has done so and has determined that building an additional processing plant in the region would not be profitable.⁵⁴ Thus, new entry—of producers or processors—is not likely to be a significant check on the exercise of market power by DFA/Dean in either the raw fluid milk or processed fluid milk market.

C. Economic Effects of the Acquisition

37. In examining the potential competitive effects of the acquisition of Dean by DFA, I consider the tradeoff between the negative and positive competitive effects of vertical mergers and acquisitions widely recognized by economists. I start with a brief review of these effects and then discuss my application of the economic reasoning to the current matter.

38. A potential negative effect of vertical acquisitions, such as those of a raw milk producer acquiring a milk processor, is when the combined firm takes actions to raise its rivals' costs of doing business. This occurs because the combined firm either offers worse terms to rival firms for the purchase and sale of their goods than they would if they were not integrated, or refuses to deal with rival firms at all, resulting in foreclosure.⁵⁵ Foreclosure can take two forms. First is "customer foreclosure." DFA/Dean can refuse to buy (or give worse conditions for the purchase of) raw milk from rival cooperatives. Second is "input foreclosure." DFA/Dean can refuse to sell (or only sell at higher prices) raw milk to rival processors with the intent of raising their costs of obtaining raw milk, thus making them less competitive at the processing level to the benefit of DFA/Dean.

39. The Government Accountability Office ("GAO") recognized the potential of customer foreclosure in the milk industry, concluding in a 2019 report that cooperatives'

⁵⁴ Declaration of Mike John, at ¶ 32.

⁵⁵ Foreclosure is not distinct from raising rivals' costs but simply a method of doing so. "Foreclosure and raising rivals' costs are similar since total foreclosure to an input in effect raises rivals' costs to the cost of its next best substitute and the same predicate conditions support these two doctrines." Steven C. Sunshine (1995), U.S. Department of Justice Deputy Assistant Attorney General for Antitrust, Vertical Merger Enforcement Policy, Address Before the American Bar Association (5 Apr), available at <https://www.justice.gov/atr/speech/vertical-merger-enforcement-policy>.

“[i]nvestments in processing facilities can benefit farmers within a cooperative while reducing market access for farmers outside of the cooperative.”⁵⁶ The GAO specifically cited as an example a joint venture that included DFA, and that may “restrict market access, for farmers who are not members of the cooperative.”⁵⁷ While the GAO noted that this harm should be weighed against benefits resulting from new market access from a new plant being built, those benefits don’t apply when DFA acquires *existing* plants.

40. A potential benefit of vertical acquisitions is the elimination or reduction of *double marginalization*. Double marginalization refers to each firm along a vertical supply chain adding a markup to the price commensurate with its market power.⁵⁸ Since this markup occurs multiple times, a merger among members of the supply chain (and the single markup the joint entity charges) can reduce prices post-acquisition. However, even a hypothetical reduction in double marginalization⁵⁹ does not imply that a vertical acquisition necessarily benefits downstream customers (or upstream sellers) or enhances economic welfare. This depends on whether the combined entity passes on these efficiencies in the form of lower prices or, in the alternative, uses the additional power granted by the acquisition to foreclose its rivals’ access to markets or to raise the costs for inputs paid by the combined entity’s rivals.⁶⁰

⁵⁶ U.S. Government Accountability Office (2019), Dairy Cooperatives: Potential Implications of Consolidation and Investments in Dairy Processing for Farmers, GAO-19-695R (27 Sept), at 6, available at <https://www.gao.gov/assets/710/701795.pdf>.

⁵⁷ U.S. Government Accountability Office (2019), Dairy Cooperatives: Potential Implications of Consolidation and Investments in Dairy Processing for Farmers, GAO-19-695R (27 Sept), at 6, available at <https://www.gao.gov/assets/710/701795.pdf>.

⁵⁸ Luke Froeb, Brian McCann, Mikhael Shor, and Michael Ward (2017), *Managerial Economics*, 5th ed., Cengage Learning, at 297.

⁵⁹ Some vertical contracts can achieve ends similar to reducing double marginalization. Thus, companies with close vertical relationships prior to an acquisition may see little efficiency gain as a result of the acquisition. Luke Froeb, Brian McCann, Mikhael Shor, and Michael Ward (2017), *Managerial Economics*, 5th ed., Cengage Learning, at 297 (“Many vertical contracts aim to achieve the same end” as a reduction in double marginalization). I cannot hypothesize about the size of the effect in the present matter without reviewing pre-acquisition DFA-Dean supply contracts.

⁶⁰ U.S. Department of Justice & Federal Trade Commission (2020), Draft Vertical Merger Guidelines (10 Jan), at § 5, available at <https://www.justice.gov/opa/press-release/file/1233741/download>.

41. It is well-known that the net effect of a vertical acquisition depends on which of the two effects—efficiencies such as reducing double marginalization or anticompetitive effects such as foreclosure—is larger.⁶¹ Thus, any benefits a vertical acquisition is purported to bring must be weighed against the anticompetitive harm of foreclosure and raising rivals' costs. An integrated firm that eliminates double marginalization may have the economic incentive to reduce its prices in the downstream market. If the integrated firm raises input costs of rivals, then those rivals have the economic incentive to raise prices in the downstream market.

42. A foreclosure theory of harm requires demonstrating that a firm has both the ability and incentive to disadvantage rivals. That is, one should show not only that a firm *could* but that a firm actually *would* do so given the economic incentives it would face following an acquisition. In the present matter, we have the benefit of experience. DFA's behavior in other regions and DFA's pre-acquisition behavior in the Carolinas under its supply agreement with Dean provide insight into the post-acquisition world and the feasibility and likelihood of foreclosure.

43. In the last six years, I understand that DFA has engaged in customer foreclosure. DFA leveraged its supply agreement to restrict and eventually eliminate its largest regional competitor's access to Dean plants.⁶² This did not appear to be consistent with Dean's economic interests.⁶³ It is consistent, however, with the GAO example above of DFA's behavior in other regions. This behavior disadvantages non-DFA cooperatives and farmers. I understand that, even prior to the acquisition, Dean did not buy additional raw milk beyond that supplied by DFA at its

⁶¹ U.S. Department of Justice & Federal Trade Commission (2020), Draft Vertical Merger Guidelines (10 Jan), at § 5, available at <https://www.justice.gov/opa/press-release/file/1233741/download>. Also see Luke Froeb, Brian McCann, Mikhael Shor, and Michael Ward (2017), Managerial Economics, 5th ed., Cengage Learning, at Chapter 23 (Managing Vertical Relationships).

⁶² Declaration of Mike John, at ¶¶ 14, 17.

⁶³ Dean moving supply from MDVA to DFA at Dean's North Carolina processing facilities is believed to be at the request of DFA and not Dean and is believed not to be the result of a competitive advantage that DFA might have. This belief is further bolstered by the fact that MDVA managed to increase its amount of raw milk sold to nearby non-Dean facilities at the same time. Declaration of Mike John, at ¶¶ 14–17, 20.

North Carolina plants despite having adequate unused capacity to do so.⁶⁴ It appears that Dean did not buy raw milk from rival dairies even though it may at times have been profitable to do so.

44. DFA has also at least on occasion leveraged its exclusive access to processors to force farmers to join DFA.

The cooperative would sign exclusive supply agreements with milk bottlers or buy the bottling plants outright, often in areas where it had few if any members. The dairy farmers who supplied the plant could then either join the cooperative or find somewhere else to sell milk. In a time of rapid consolidation, there often were not any other plants within a reasonable distance.⁶⁵

45. DFA's ability to foreclose will only strengthen post-acquisition as outright ownership will allow more control over Dean's processing facilities than a supply contract. This is because Dean's ability to breach or threaten to breach a contract allowed Dean some check on DFA's anticompetitive pursuits. Following the acquisition, DFA is free to pursue a foreclosure strategy unconstrained by Dean's independent interests. DFA has found foreclosure to be a profitable practice both in the past and in the present likely either because of its effect on competitors or because it provides leverage to compel farmers to switch to DFA, or both. In either case, this foreclosure allows a combined DFA/Dean to anticompetitively leverage its downstream market power in milk processing into additional upstream market power in milk production. This would be at the expense of its only significant competitor in the Carolinas, MDVA.⁶⁶ While I have not independently verified MDVA's viability, I understand that the COO of MDVA believes that DFA/Dean's foreclosure actions could lead MDVA to withdraw from supplying processing plants in the Carolinas with raw milk.⁶⁷

⁶⁴ Declaration of Mike John, at ¶ 15.

⁶⁵ Jennifer Gao and Nigel Haworth (2011), The Global Dairy Industry, Report Prepared for the International Union of Food Workers, at 125, available at <http://www.iuf.org/sites/cms.iuf.org/files/Final%20IUF%20report.pdf>.

⁶⁶ Declaration of Mike John, at ¶ 9.

⁶⁷ Declaration of Mike John, at ¶ 29.

46. Dean/DFA's customer foreclosure has the ability to cause higher prices for raw milk. If DFA uses access to DFA/Dean processing to compel farmers to leave MDVA and instead join DFA/Dean, DFA/Dean further weakens its only rival cooperative in the supply of raw milk. Clearly, DFA/Dean's resulting enhanced market power (or even monopoly power) in raw milk would be expected to increase prices for raw milk.

47. While pre-acquisition, DFA restricted rivals' access to selling raw milk to Dean (customer foreclosure), I have not yet seen direct evidence of input foreclosure—DFA refusing to sell (or only selling at higher prices) raw milk to Dean's rival processors for anticompetitive reasons. The combined DFA/Dean may have the ability and incentive to favor its own processors over its rivals, reducing or eliminating sales of raw milk to rival processors. The degree to which DFA/Dean would favor its own processors would depend on the tradeoff between DFA/Dean's lost profits to the upstream division from selling raw milk at higher-than-optimal prices and DFA/Dean's increased profits to the downstream division from facing less competition in the market for processed milk.⁶⁸ In the recently released FTC-DOJ Draft Vertical Merger Guidelines, an example highlights the Agencies' concerns with exactly this situation:

[Following a merger of an orange orchard and orange juice producer] the merged firm may be able to profitably stop supplying oranges ... to rival orange juice suppliers ... The merged firm will lose the margin on the foregone sales of oranges but may benefit from increased sales of orange juice ... If the benefits outweighed the costs, the merged firm would find it profitable to foreclose.⁶⁹

48. There is additional indirect evidence of foreclosure currently occurring in the Carolinas. In an efficient, competitive milk market, all else being equal, processors should buy raw

⁶⁸ "If the upstream merger partner has some market power, input price increases to downstream rivals (perhaps to a level *above* the monopoly price) will raise their costs, allowing the dominant firm to increase price or output. Upstream profits are sacrificed but downstream prices rise disproportionately." Stephen Salop & David Scheffman (1983), *Raising Rivals' Costs*, *American Economic Review* 73(2) (Papers & Proceedings), 267–271, at 268.

⁶⁹ U.S. Department of Justice & Federal Trade Commission (2020), *Draft Vertical Merger Guidelines* (10 Jan), available at <https://www.justice.gov/opa/press-release/file/1233741/download>.

milk from the closest farms and retail customers should buy processed milk from the closest processors. Imagine a producer that sells its raw milk to Processor A and bypasses a closer Processor B to whom it does not sell raw milk. Clearly, it could sell to Processor B at a lower price since it would save on transportation. If the reverse were true for a different farm—it sells to Processor B but is closer to Processor A—then this results in an inefficient outcome; the two farms could switch processors and both save money on transportation. While my analysis is preliminary, I understand that such “cross-shipments” occur at both upstream and downstream markets in and around the Carolinas and appear to involve DFA/Dean.⁷⁰ These wasteful cross-shipments are likely to lower farmers’ profits while raising the cost of raw milk. This is because minimizing transportation costs is so important.⁷¹ Inefficiencies like cross-shipments are associated with the exercise of market power. I would have expected the amount of cross-shipping to decline absent the acquisition as the expiration of the DFA-Dean supply contract restored greater competition.

49. Cross-shipping can also raise DFA/Dean’s own costs if it foregoes a nearby rival’s farm to buy raw milk from a more distant DFA/Dean farm. For example, an MDVA farm may be the lowest-cost supplier to a nearby DFA/Dean processing facility but if DFA/Dean refuses to buy from this MDVA farm, the farm will be forced to go to a more distant processing facility, with higher transportation costs. If DFA/Dean can raise a rival processor’s costs more than it raises its own, this can be a profitable strategy.

50. However, DFA/Dean might instead use foreclosure to compel that nearby farm to leave its current cooperative and join DFA/Dean. In this way, DFA/Dean avoids cross-shipping its own raw milk while hurting both a rival cooperative and rival processors. It appears quite likely that rival cooperatives would lose both an outlet for sale of their raw milk and their members,

⁷⁰ For example, the COO of MDVA states that his cooperative’s inability to sell to Dean “requires MDVA to incur additional transportation costs associated with shipping raw milk.” Declaration of Mike John, at ¶ 20.

⁷¹ For example, Dean has recognized that “our cost of distribution on a per gallon basis has increased as we have changed distribution routes and transported product into areas previously serviced by now closed plants.” While shipping past a closed plant is not “cross-shipping,” it reflects the cost of cross-shipping. Dean acknowledges that these costs are significant and may offset the savings from closing a production facility. Dean Foods Company (2019), 2018 Form 10-K, at 9, available at <https://ir.deanfoods.com/static-files/63e25807-c779-41da-89e3-a3eb9d3360d1>.

further weakening their ability to be a check on DFA/Dean's power. Non-DFA/Dean processors in the Carolinas would see their costs rise and their ability to compete with DFA/Dean diminish.

51. Generally, we might expect input foreclosure (or selling raw milk to rival processors at worse terms) to be used by a firm with large upstream power to restrict competition downstream and we might expect customer foreclosure (or refusing to buy raw milk from rival cooperatives) to be used by a firm with large downstream power to restrict competition upstream. Here, a firm with a majority share both upstream and downstream could use both types of foreclosure to significantly strengthen and reinforce its market power at both levels.

52. I note that these dual forms of foreclosure—customer foreclosure and input foreclosure—may at first seem like a good-news / bad-news scenario for DFA/Dean's rival raw milk producers. On one hand, DFA's history of customer foreclosure denies a rival like MDVA access to a large potential buyer of raw milk. This reduces MDVA's ability to maintain profitability, efficient scale, and a network of farmers. On the other hand, the potential for input foreclosure appears at first glance to grant MDVA access to non-DFA/Dean processors. In my opinion, it is highly unlikely that the net effect would be anything but significant harm to MDVA in a manner that would be harmful to the competitive process as a whole. This is because if DFA/Dean engages in customer foreclosure, MDVA farmers—even those right near DFA/Dean plants—will be prevented from gaining highly efficient and profitable sales. Conversely, if DFA/Dean engages in input foreclosure, it can increase the costs to rival processors by simply demanding higher costs for its own milk (to no benefit of MDVA) or, at best, by ceding to MDVA some access to non-DFA/Dean processing plants that DFA/Dean expects to be offered at high cost, perhaps due to significant shipping distances. In short, MDVA would be expected to lose significant highly profitable (low transportation distance) business while gaining, at best, some incremental less profitable (high transportation distance) business.

53. Through its foreclosure of a major buyer and seller of raw milk, the weakening of its only rival in the market for raw milk, and the introduction of wasteful cross-shipping, a combined DFA/Dean is quite capable of raising raw milk costs to DFA/Dean's rival processors.

54. Lastly, I turn to the question of how the above effects translate into the prices of processed milk to customers like retailers. As I conclude above, a likely result of the acquisition is that Dean's rivals at the processing level would see higher costs for raw milk. In the best-case scenario for competition where DFA/Dean recognizes some efficiencies from the acquisition, DFA/Dean's processing rivals would still face higher costs. It is these higher costs paid by DFA/Dean's processing rivals that can ultimately result in higher prices to downstream retailers such as Food Lion. In order to win a procurement contract, the winning supplier has to bid lower than its rivals. If DFA/Dean can raise the costs of rival processing suppliers, then DFA/Dean can bid higher and still win. The price increases because the losing bidder's costs determine what the winner has to pay.

55. By way of example, imagine an art auction where bidders A and B are each willing to pay up to \$100 for a particular painting and a third bidder C is willing to pay up to \$10,000. Once the bid reaches \$100, A and B will drop out and C would emerge as the winner bidder, likely at \$101. The winning bidder only needs to outbid the second-highest bidder to win. It is irrelevant if our winning bidder C is willing to pay \$10,000, \$100,000 or even \$1,000,000. As soon as the second-highest bidder's value is reached, that bidder drops out and the auction ends. It is commonly understood by economists that the strongest *losing* bidder determines the price.⁷²

56. In the case of procurement, the same idea is true but in reverse. The price Food Lion could expect an auction or RFP process to yield would be not the lowest price a firm would be willing to offer but the second-lowest price. This is because playing the best two firms off of each other only works until one of them drops out. Thus, even if DFA/Dean is the winning bidder because it has lower costs, the price Food Lion must pay will be based not on the price that

⁷² Luke Froeb, Brian McCann, Mikhael Shor, and Michael Ward (2017), *Managerial Economics*, 5th ed., Cengage Learning, at Chapter 18 (Auctions).

DFA/Dean could have offered but based on DFA/Dean's rivals' bids. If those rival bids are higher as a result of the merged DFA/Dean's foreclosure strategy, the price paid by customers of processed milk would be expected to rise.

57. In short, I would expect processed milk prices to rise as a result of the acquisition whenever DFA/Dean is the supplier. I would also expect prices to rise whenever two DFA/Dean rivals are the likely suppliers, as a result of their higher costs. Depending on the nature of the RFP process, a customer like Food Lion might end up paying more for milk from a non-DFA/Dean processor than it would have paid DFA/Dean for milk in the absence of its anticompetitive acts.⁷³ I cannot yet confidently predict the extent to which supply agreements with other processors will be affected when DFA/Dean is an active participant in the auction but not the supplier. That answer would require both additional time for econometric analysis and data on pricing practices of Dean (prior to being acquired by DFA) and other processors—information which is not currently accessible to me. However, insight from a study of horizontal mergers is instructive:

If the merged entity is sufficiently large, no amount of merger synergy can offset the anticompetitive price [increase] when the merging firms win. This happens because the synergies [decrease] price only in auctions that the merging firms do not win. If the merging firms are already winning most of the auctions, then making them stronger cannot offset the anticompetitive price decline.⁷⁴

58. Given DFA/Dean's estimated market share in processed milk is above 50%, DFA/Dean wins more often than it loses. In such cases, there is a strong presumption that the overall effect on the processed milk market will be higher prices as a result of the acquisition.

⁷³ This is possible, for example, when processors submit sealed bids and DFA/Dean overbids in hopes of higher profits while overestimating the supply costs and bids of its rivals.

⁷⁴ Lance Brannman and Luke Froeb (2000), Mergers, Cartels, Set-Asides, and Bidding Preferences in Asymmetric Oral Auctions, *Review of Economics and Statistics* 82(2), 283–290, at 287. I reverse the “increase/decrease” language in the original quote to make the implication of “selling” auctions apply to the present situation of “buying” or procurement auctions since the theory “applies equally for procurement auctions with a simple change of sign.” Luke Froeb and Mikhael Shor (2005), Auction Models, in John Harkrider, ed., *Econometrics: Legal, Practical, and Technical Issues*, American Bar Association Section of Antitrust Law, 225–246, at 227.

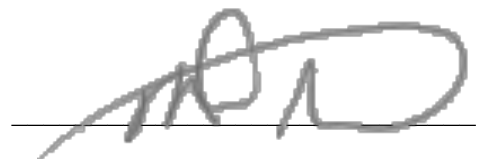
59. This acquisition presents a unique situation. Usually economists evaluate how an acquisition will change an industry from its current competitive environment. In this case, however, the industry was already potentially constrained (and had been for many years) by the exclusive supply agreement between DFA and Dean. Therefore, an acquisition that aims to strengthen the effect of that supply agreement may not appear in the short term to change the industry significantly. This is not the correct conclusion. The supply agreement would have soon expired in the absence of this acquisition or would no longer be in effect upon the acquisition of a processing plant by a company other than DFA. Therefore, the right way to evaluate the effects of *this* acquisition is to compare the competitive effects of the acquisition against the backdrop of competition in the absence of the supply agreement. Given the information available to me at this time, I am of the opinion that the supply agreement had an anticompetitive effect prior to the acquisition and that the acquisition is likely to extend and magnify that anticompetitive effect.

60. Lastly, I was asked to opine briefly on the potential impact of a divestiture of one or more of the Dean processing facilities in North Carolina. The potential for anticompetitive harm described above would be significantly mitigated if one or more Dean plants were operated independent of DFA. Providing farmers with proximate processing options under the control of an independent or rival firm reduces DFA/Dean's ability to profit from foreclosure in this region.

* * *

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Executed on the 20th of May 2020, at Coventry, Connecticut.

A handwritten signature in dark ink, appearing to read 'Mikhael Shor', is written over a horizontal line.

Mikhael Shor

APPENDIX 1

CURRICULUM VITAE OF MIKHAEL SHOR

MIKHAEL SHOR

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POSITIONS

| | |
|----------------|---|
| 2011 – present | University of Connecticut , Department of Economics Associate Professor with tenure 2014 – present Assistant Professor 2011 – 2014 Faculty Affiliate, Cognitive Science Program Faculty Affiliate, Connecticut Institute for Resilience & Climate Adaptation (CIRCA) |
| 2020 – present | Berkeley Research Group , Emeryville, CA Economic Affiliate |
| 2009 – 2020 | Competition Economics , Emeryville, CA Senior Economic Affiliate |
| 2007 – 2009 | ERS Group , Emeryville, CA Economic Consultant |
| 2001 – 2011 | Vanderbilt University , Owen Graduate School of Management Assistant Professor |

EDUCATION

| | | | |
|-------|------|-------------------------------|-----------------------------|
| Ph.D. | 2001 | Rutgers University | Economics |
| M.A. | 1997 | Rutgers University | Economics |
| B.A. | 1994 | University of Virginia | Economics & Foreign Affairs |

AREAS OF SPECIALIZATION

Competition economics & antitrust
Analysis of auction markets
Behavioral economics & decision making

PUBLICATIONS

REFEREED JOURNAL ARTICLES

- [21] Optimizing Choice Architectures (2019), with Tibor Besedeš, Cary Deck, Sudipta Sarangi, and Mark Schneider, *Decision Analysis* 16(1), 2–30.
- [20] The Common Ratio Effect in Choice, Pricing, and Happiness Tasks (2017), with Mark Schneider, *Journal of Behavioral Decision Making* 30(4), 976–986.
- [19] Reducing Choice Overload Without Reducing Choices (2015), with Tibor Besedeš, Cary Deck, and Sudipta Sarangi, *Review of Economics and Statistics* 97(4), 793–802.
- [18] How Collaborative Forecasting Can Reduce Forecast Accuracy (2015), with Michael Galbreth and Mumin Kurtulus, *Operations Research Letters* 43(4), 349–353.
- [17] Innovators, Implementers, and Two-sided Hold-up (2015), with Luke Froeb, *Antitrust Source* 14(6), 1–10.

- [16] Effort and Performance: What Distinguishes Interacting and Noninteracting Groups from Individuals? (2014), with Tibor Besedeš, Cary Deck, Sarah Quintanar, and Sudipta Sarangi, *Southern Economic Journal* 82(2), 294–322.
- [15] Information Concentration in Common Value Environments (2013), with Vlad Mares, *Review of Economic Design* 17(3), 183–203.
- [14] Age Effects and Heuristics in Decision Making (2012), with Tibor Besedeš, Cary Deck, and Sudipta Sarangi, *Review of Economics and Statistics* 94(2), 580–595.
- [13] Social Sharing of Information Goods: Implications for Pricing and Profits (2012), with Michael Galbreth and Bikram Ghosh, *Marketing Science* 31(4), 603–620.
- [12] On the Competitive Effects of Bidding Syndicates (2012), with Vlad Mares, *B.E. Journal of Economic Analysis & Policy [Frontiers]* 12(1), 1–31.
- [11] Decision-Making Strategies and Performance among Seniors (2012), with Tibor Besedeš, Cary Deck, and Sudipta Sarangi, *Journal of Economic Behavior & Organization* 81(2), 524–533.
- [10] Behavioral Antitrust and Merger Control (2011), with Gregory Werden and Luke Froeb, *Journal of Institutional and Theoretical Economics* 167(1), 126–142.
- [9] The Impact of Malicious Agents on the Enterprise Software Industry (2010), with Michael Galbreth, *MIS Quarterly* 34(3), 595–612.
- [8] Decentralization, Transfer Pricing, and Tacit Collusion (2009), with Hui Chen, *Contemporary Accounting Research* 26(2), 581–604.
- [7] Industry Concentration in Common Value Auctions: Theory and Evidence (2008), with Vlad Mares, *Economic Theory* 35(1), 37–56.
- [6] The Physician-Patient Relationship: The Impact of Patient-Obtained Medical Information (2006), with Bin Xie and David M. Dilts, *Health Economics* 15(8), 813–833.
- [5] Price Discrimination through Online Couponing: Impact on Purchase Intention and Profitability (2006), with Richard L. Oliver, *Journal of Economic Psychology* 27(3), 423–440.
- [4] A Game Theoretic Model of E-Marketplace Participation Growth (2005), with Michael Galbreth, Sal March, and Gary Scudder, *Journal of Management Information Systems* 22(1), 295–320.
- [3] An Experiment on Learning with Limited Information: Nonconvergence, Experimentation Cascades, and the Advantage of Being Slow (2004), with Eric Friedman, Scott Shenker, and Barry Sopher, *Games and Economic Behavior* 47(2), 325–352.
- [2] Induced Over-Benefiting and Under-Benefiting on the Web: Inequity Effects on Feelings and Motivations with Behavioral Implications for Consumption Behavior (2004), with Richard L. Oliver and Simon Tidd, *Motivation and Emotion* 28(1), 85–106.
- [1] Digital Redemption of Coupons: Satisfying and Dissatisfying Effects of Promotion Codes (2003), with Richard L. Oliver, *Journal of Product & Brand Management* 12(2), 121–134.

TEXTBOOK

Managerial Economics: A Problem-Solving Approach (5th edition, 2017), with Luke Froeb, Brian McCann, and Michael Ward, Cengage.

REFEREED BOOK CHAPTER

Auction Models (2005), with Luke Froeb, in John D. Harkrider, ed., *Econometrics: Legal, Practical, and Technical Issues*, American Bar Association Section of Antitrust Law, 225–246.

PEDAGOGICAL MATERIALS

Game Theory .net (2003), *Journal of Economic Education* 34(4), 388.

Generating Random Sequences (2001), *Journal of Online Mathematics and Applications* 1(3).

Business school cases: “The Viswa: Divine Technology” Parts 1 and 2, 2005 (pricing case)
 “Airline Seat Capacity,” 2002 (game theory case)
 “Television Genre Selection and Announcement Timing,” 2002 (game theory case).

HONORS

| | |
|------------|--|
| 2015 | Grillo Family Award for Excellence in Teaching, University of Connecticut |
| 2013 | Most Appreciated Faculty Award, Association of Graduate Economics Students, University of Connecticut |
| 2012 | Grillo Family Award for Excellence in Research, University of Connecticut |
| 2012, 2016 | SHARE Research Award, University of Connecticut |
| 2008, 2010 | James A. Webb Award for Excellence in Teaching, Vanderbilt University <i>Awarded annually to one faculty member by the MBA class, Vanderbilt University</i> Finalist, 2002, 2005, 2006, 2011 |
| 2002 | Dean's Award for Teaching Excellence, Vanderbilt University |
| 2000 | Peter Asch Dissertation Award, Rutgers University |
| 2000 | Sidney I. Simon Outstanding Teacher Award, Rutgers University |
| 1995-1999 | Graduate Fellowship, Rutgers University |
| 1997 | Sidney Brown Prize for Graduate Studies in Economics, Rutgers University |

RESEARCH GRANTS

| | |
|-------------|--|
| 2008 – 2011 | Decision-making with too Many Options (\$363,722) PI: Mikhael Shor (Co-PIs: Tibor Besedes, Cary Deck, Sudipta Sarangi) National Institutes of Health (1R21AG030184, priority score 129, 4.1%) |
| 2016 – 2017 | Motivated Reasoning and Political Ideology (\$13,000) PI: Mikhael Shor (Co-PIs: Salil Benegal, Tom Hayes, Peter Malfese) Brain Imaging Research Center , UConn, Seed grant |
| 2009 | Heuristic Biases in Defense Procurement (subcontract: \$26,400) Subcontract PI: Mikhael Shor (grant PI: William Neilson) United States Air Force (FA7014-06-D-00190-T9) |
| 2005 | Sloan Center for Internet Retailing , Research development grant (\$5,000) |

REFEREEING & GRANT REVIEWS

National Institutes of Health Special Emphasis Panel (2013)

Ad Hoc Reviewer for National Science Foundation

Ad Hoc Reviewer for Social Sciences and Humanities Research Council of Canada

Ad Hoc reviewer for *American Economic Review*; *American Law and Economics Review*; *Computational and Mathematical Methods in Medicine*; *Economic Inquiry*; *European Economic Review*; *Experimental Economics*; *Games*; *Games and Economic Behavior*; *IEEE Transactions on Dependable and Secure Computing*; *IEEE Transactions on Evolutionary Computation*; *Journal of Economic Psychology*; *Journal of Economic Behavior and Organization*; *Journal of Economic Education*; *Journal of Economics and Management Strategy*; *Journal of Health Economics*; *Journal of Industrial Economics*; *Journal of Institutional Economics*; *Journal of Law, Economics, and Organization*; *Marketing Science*; *Production and Operations Management*; *RAND Journal of Economics*; *Review of Economic Design*; *Scandinavian Journal of Economics*; *Southern Economic Journal*; *Theory and Decision*

CONFERENCE PRESENTATIONS

| | |
|----------------|---|
| October 2019 | U Penn Law Symposium on the “Post-Chicago Antitrust Revolution” |
| June 2016 | New England Experimental Economics Workshop |
| June 2015 | New England Experimental Economics Workshop |
| October 2013 | INFORMS Annual Meeting, Minneapolis, MN |
| July 2013 | World Meetings of the Economic Science Association, Zurich, Switzerland |
| July 2012 | Fourth World Congress of the Game Theory Society, Istanbul, Turkey |
| May 2010 | Behavioral and Quantitative Game Theory, Newport Beach, CA |
| October 2009 | INFORMS Annual Meeting, San Diego, CA |
| October 2008 | Midwest Economic Theory Conference, Ohio State, Columbus, OH |
| July 2008 | Third World Congress of the Game Theory Society, Evanston, IL |
| May 2008 | International Industrial Organization Conference, Arlington, VA |
| October 2007 | Economic Science Association, Tucson, AZ |
| September 2006 | Economic Science Association, Tucson, AZ |
| September 2005 | Economic Science Association, Tucson, AZ |
| January 2005 | Econometric Society North American Winter Meeting, Philadelphia, PA |
| July 2004 | Second World Congress of the Game Theory Society, Marseille, France |
| November 2003 | Sloan Center for Internet Retailing Inaugural Conference, Vanderbilt, Nashville, TN |
| September 2002 | INFORMS Conference on Pricing Research, Cornell University, Ithaca, NY |
| November 2001 | Southern Economic Association Conference, Tampa, FL |
| April 2001 | NSF/CEME Decentralization Conference, Northwestern University, Evanston, IL |
| July 2000 | First World Congress of the Game Theory Society, Bilbao, Spain |
| July 2000 | International Conference on Game Theory, Stony Brook, NY |
| June 2000 | Economic Science Association, New York, NY |

SELECTED INVITED SEMINARS

Georgia Tech, Texas A&M, University of Connecticut, University of Massachusetts-Amherst, University of Tennessee, University of Texas at Dallas, University of Texas at Arlington, Vanderbilt University Department of Economics, Vanderbilt University School of Management, Virginia Tech, West Virginia University School of Medicine, IBM TJ Watson Research Center

PROFESSIONAL ACTIVITIES

| | |
|----------------|--|
| 2012 – present | Associate Editor, <i>Economic Inquiry</i> |
| 2003 – 2008 | Co-editor of Bulletin and web site, <i>Game Theory Society</i> |

TEACHING

| | |
|-----------------|---|
| 2011-present | Department of Economics, University of Connecticut <i>Game Theory</i> , undergraduate (4.8/5) <i>Experimental Economics</i> , graduate (5.0/5) <i>Microeconomic Theory II</i> , graduate (4.7/5) |
| 2000-2011, 2017 | Owen Graduate School of Management, Vanderbilt University <i>Game Theory & Business Strategy</i> , MBA elective (4.6/5) <i>Pricing Strategies</i> , MBA elective (4.7/5) <i>Managerial Economics</i> , MBA core course (4.6/5) <i>Strategies for Network Economies</i> , MBA elective (4.8/5) <i>Game Theory & Strategic Thinking</i> , Executive seminar (4.3/5) |
| 1996-2000 | Department of Economics, Rutgers University <i>Industrial Organization</i> , undergraduate (4.7/5) <i>Law and Economics</i> , undergraduate (4.6/5) |

UNIVERSITY SERVICE

| | |
|--------------|---|
| | University of Connecticut |
| 2019-present | Department merit committee (by election) |
| 2013-present | Faculty affairs committee (chair, 2015-2017) |
| 2016-2017 | Department merit committee (by election) |
| 2015-2017 | AAUP Representatives Assembly member |
| 2011-present | Graduate affairs committee |
| 2011-present | Microeconomics preliminary examination committee |
| 2015-2016 | Department Head search committee (by election) |
| 2011-2013 | Department website committee (chair) |
| | Vanderbilt University |
| 2008-2010 | Honor Council advisor |
| 2003-2004 | Faculty recruitment committee (economics & business strategy) |
| 2001-2003 | Committee on instruction |
